

U.S. ARMY CORPS OF ENGINEERS SACRAMENTO DISTRICT

ENERGY SAVINGS OPPORTUNITY SURVEY

DUGWAY PROVING GROUND

FY86

EXECUTIVE SUMMARY

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ENERGY SAVINGS OPPORTUNITY SURVEY

for the

ENERGY ENGINEERING ANALYSIS PROGRAM

DUGWAY PROVING GROUND Dugway, Utah

Contract No. DACA05-86-0088

For

Sacramento District
CORPS OF ENGINEERS

September 1987



ENGINEERING CONSULTING RESOURCES, INC. 4609 South 2300 East, Suite 101 Salt Lake City, Utah 84117 (801) 277-7879

DEPARTMENT OF THE ARMY

CONSTRUCTION ENGINEERING RESEARCH LABORATORIES, CORPS OF ENGINEERS
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Marie Wakef**k**e

Librarian Engineering

EXECUTIVE SUMMARY

An Energy Savings Opportunity Survey (ESOS) has been completed for the U.S. Army Dugway Proving Ground facility located at Dugway, Utah. This work, conducted as part of the Energy Engineering Analysis Progarm (EEAP), included: a review of previous studies; an evaluation of selected projects and energy conservation opportunities (ECOs); a site survey of 53 selected buildings to identify additional ECOs; analysis of the energy and cost savings and ECOs project costs; and preparation of project documentation for funding and implementation.

Over 150 different energy conservation opportunities (ECOs), shown on pages 2 through 5, were identified during this ESOS. Economic analysis indicates that only 106 of these ECOs had a savings-to-investment (SIR) ratio greater than one. The estimated savings from the 106 ECOs was nearly 45,000 MBTU or 15% of the FY84-85 overall energy (MBTU) usage. Cost savings for the 106 ECOs are estimated to approach \$271,000 or 9% of the same period. Most all of the ECOs identified save fuel oil rather than electricity. Total savings from the fuel oil ECOs exceed \$260,000 or over 19% of the FY84-85 fuel oil usage.

Seven projects were selected by Dugway Proving Ground for funding and implementation. These projects, outlined on pages 6 - 7 with supporting data starting on page 8, are estimated to save 44,000 MBTUs and over \$267,900 annually. The estimated cost for design and construction of these projects is approximately \$1,197,000.

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ENGINEERING CONSULTING RESOURCES, INC. Energy Savings Opportunity Survey		NAME	Electronic/Electric Shop	Post Chapel	Gymnasium	Fire Station	Military Mens Quarters	DPG Community Club	Child Care Center	Station Hospital	Hospital Dormitory	DPG Community Club Annex	- 1	Dugway Mall	Administration Bldg	Provost Marshal Office	Post Headquarters	Transportation Office	Craft Shop	Auto Motor Maint Shop		Steam Cleaning Facility	Heating Plant	Operations Bldg	Supply Warehouse	Self Service Supply		Communications Storage
ENC		BLDG #	4233	5100	5111	5212	5222	5230	5234	5236	5240	5300	5314	5326	5330	5438	5450	5454	2460	5470	5474	5553	9995	5710	6002	8009	6016	6048

ENERGY SAVINGS OPPORTUNITY SURVEY PROJECTS

Project #1 - The three ECOs selected for this project will be implemented at eight DPG facilities and includes: modifications to the existing automatic temperature controls, permanent night setback temperature controls, and modifications to existing light switching. The project will be funded under the Quick Return on Investment Program (QRIP).

MBTU Savings	Cost Savings	Project Cost		
				•
8,344	\$ 50,085	\$ 68,795	Simple Payb	back: 1.4 yrs

Project #2 - The four ECOs selected for this project will be implemented at 39 DPG facilities and includes: night setback temperature controls, an economizer, pipe and tank insullation, and automatic door closers. The project will be funded under Office, Secretary of Defense Productivity Investment Funding (OSD PIF).

MBTU Savings	Cost Savings	Project Cost		
17,215	\$104,269	\$316,883	Simple Payba	ack: 3.0 yrs

Project #3 - The ECO selected for this project will be implemented at six DPG facilities. The ECO includes roof and/or wall insulation. The project will be funded under Office, Secretary of Defense Productivity Investment Funding (OSD PIF).

MBTU Savings	Cost Savings	Project Cost	
4,958	\$ 29,312	\$ 84,438	Simple Payback: 2.9 yrs

Project #4 - The ECO selected for this project will be implemented at nine DPG facilities. The ECO includes roof and/or wall insulation. The project will be funded as a Low Cost/No Cost type project.

MBTU Savings	Cost Savings	Project Cost	
			•
1.663	\$ 9.825	\$141,361	Simple Payback: 14.4 yrs

ESOS PROJECTS - CONTINUED

Project #5 - The ECO selected for this project will be implemented at nine DPG facilities. The ECO includes interior storm windows. The project will be funded as a Low Cost/No Cost type project.

MBTU Savings	Cost Savings	Project Cost	
1,858	\$ 10,994	\$116,708	Simple Payback: 10.6 yrs

Project #6 - The ECO selected for this project will be implemented at one DPG facility. The ECO includes infrared oil-fired heaters. The project will be funded as a Low Cost/No Cost type project.

MBTU Savings	Cost Savings	Project Cost	
2,031	\$ 12,959	\$154,431	Simple Payback: 11.9 yrs

Project #7 - The ten ECOs selected for this project will be implemented at 18 DPG facilities and includes: weather stripping and caulking, replacement of incandescent light fixtures, infrared oil-fired heaters, shower flow restrictors, heat recovery systems, swimming pool cover, motor speed controls, evaporative cooler controls, fluorescent ballast controls, and photoelectric light switches. The project will be funded as a Low Cost/No Cost type project.

MBTU Savings	Cost Savings	Project Cost		
		~~~~		
8,385	\$ 50,498	\$314,490	Simple Payback: 6.2 y	rs

REF: PROJ #1

PROJECT: PROJECT #1 FUNDING = QRIP

DATE: AUG 1987

BY: CMY

DESCRIPTION:

PROJECT #1 :CONTROL AND LIGHTING MODIFICATIONS

BLDG. #	ECO #	CONSTRUCTION COST	CONTRACT COST	TOTAL COST
2028	42	\$10,264	\$1,232	\$11,496
4110	42	\$14,878	\$1,785	\$16,663
4120	42	\$10,182	\$1,222	\$11,405
5222	42	\$24,542	\$2,945	\$27,488
1006	49	\$686	\$82	\$768
4053	49	\$-711	\$49	\$460
5300	49	\$359	\$43	\$402
4090	61	\$99	\$12	\$111
				n aller anne dige anne anne anne arte fore anne anne anne anne
TOTALS		\$61,424	\$7,371	\$68,795

PROJECT: PROJECT #1 FUNDING = QRIP

REF: PROJ #1 DATE: AUG 1987

BY: CMY

DESCRIPTION:

PROJECT #1 : CONTROL AND LIGHTING MODIFICATIONS

	•						
BLDG. #	ECO #	THERMAL MBTU	ENERGY DOLLARS				TOTAL SAVINGS
2028	42	1 0 2 3	\$6,047	0	Ø	\$0	\$6,047
4110	42	2210	\$13,064	55313	189	\$1,830	\$14,894
4120	42	3611	\$21,346	0	Ø	\$0	\$21,346
5222	42	422	\$2,494	0	0	\$0	\$2,494
1 005	49	503	\$2,972	Ø	Ø	\$0	\$2,972
4053	49	2.1	\$123	Ø	0	\$0	\$123
5300	49	351	\$2,072	2043	7	\$68	\$2,140
4090	61	Ø	\$Ø	2097	7	\$69	\$69
TOTALS		8141	\$48,118	59453	203	\$1,967	\$50,085
TOTAL MBT	·U =	8141	THERMAL +	203	ELECT. =	8344	TOTAL MBTU

REF: PROJ #2 DATE: AUG 1987 PROJECT: PROJECT #2 FUNDING = OSD-PIF

BY: CMY

DESCRIPTION:

PROJECT #2 :NIGHT SETBACK, ECONOMIZER, INSULATION AND AUTOMATIC

	OSD-PIF	DOOR CLOSERS		
BLDG. #	ECO #	CONSTRUCTION COST	CONTRACT COST	TOTAL COST
1010	17	\$7,439	\$893	\$8,332
1012	17	\$3,025	\$363	\$3,388
1020	17	\$2,837	\$340	\$3,177
1040	17	\$622	\$75	\$697
2032	17	\$726	\$87	\$813
3046	17	\$1,037	\$124	\$1,161
3056	17	\$2,454	\$295	. \$2,749
3080	17	\$6,490	\$779	\$7,269
3096	17	\$1,367	\$154	\$1,531
3096	53	\$1,426	\$171	\$1,597
4003	17	\$1,752	\$210	\$1,962
4003	54	\$3,040	\$365	\$3,405
4006	17	\$1,665	\$200	\$1,865
4010	17	\$9,336	\$1,120	\$10,456
4090	17	\$311	\$37	\$348
4117	17	\$3,971	\$477	\$4,448
4126	17	\$15,125	\$1,815	\$16,940
4132	17	\$484	\$58	\$542
4204	1.7	\$1,353	\$162	\$1,515
4220	17	\$1,453	\$174	\$1,627
SUBTOTAL	THIS PAGE	\$65,913	\$7,909	\$73,822

PROJECT: PROJECT #2

***PAGE 2***

REF: PROJ #2 DATE: AUG 1987

BY: CMY

DESCRIPTION:

PROJECT #2 :NIGHT SETBACK, ECONOMIZER, INSULATION AND AUTOMATIC

OSD-PIF DOOR CLOSERS

BLDG. #	ECO #	CONSTRUCTION COST	CONTRACT COST	TOTAL COST
SUBTOTAL F	PREV PAGE	\$65,913	\$7,909	\$73,822
4233	17	\$7,081	\$850	\$7,931
5100	17	\$755	\$91	\$846
5111	17	\$14,579	\$1,750	\$16,329
5212	17	\$8,823	\$1,059	\$9,882
5212	54	\$2,027	\$243	\$2,270
523 <b>0</b>	17	\$15,694	\$1,883	\$17,577
5234	17	\$18,549	\$2,226	\$20,775
5236	17	\$15,627	\$1,875	\$17,502
5236	53	\$1,088	\$131	\$1,219
5240	17	\$1,634	\$196	\$1,830
5314	17	\$52,174	\$6,261	\$58,435
5326	17	\$3,715	\$446	\$4,161
5330	17	\$13,362	\$1,603	\$14,965
5438	17	\$4,411	\$529	\$4,940
5450	17	\$10,828	\$1,299	\$12,127
5450	19	\$8,111	\$973	\$9,084
5454	17	\$910	\$109	\$1,019
5460	17	\$15,554	\$1,866	\$17,420
5470	17	\$8,163	\$980	\$9,143
SUBTOTAL I	DAGES 182	\$269,003	\$32,279	\$301,282

PROJECT: PROJECT #2

***PAGE 3***

REF: PROJ #2 DATE: AUG 1987

BY: CMY

DESCRIPTION:

PROJECT #2 :NIGHT SETBACK, ECONOMIZER, INSULATION AND AUTOMATIC

OSD-PIF DOOR CLOSERS

BLDG. #	ECO #	CONSTRUCTION COST	CONTRACT COST	TOTAL COST
SUBTOTAL	PAGES 1&2	\$269,003	\$32,279	\$301,282
5470	54	\$6,080	\$730	\$6,810
5474	17	\$1,821	\$218	\$2,039
6002	17	\$428	\$51	\$479
6008	17	\$1,029	\$123	\$1,152
6016	17	\$2,193	\$263	\$2,456
6016	53	\$669	\$80	\$749
<b>604</b> 8	17	\$1,709	\$205	\$1,914
TOTAL PAG		\$282,934	\$33,949	 \$316,883

REF: PROJ #2

PROJECT: PROJECT #2 FUNDING = OSD-PIF

DATE: AUG 1987

BY: CMY

DESCRIPTION:

PROJECT #2 :NIGHT SETBACK, ECONOMIZER, INSULATION AND AUTOMATIC

DOOR CLOSERS OSD-PIF

	OSD-PIF	DOOR C	LOSERS				
BLDG. #	ECO #	THERMAL MBTU	ENERGY DOLLARS	ELEC	TRICAL MBTU	ENERGY DOLLARS	TOTAL SAVINGS
1010	17	832	\$4,918	14462	49	\$479	\$5,396
1012	17	62	\$365	463	2	\$15	\$380
1020	17	704	\$4,160	3777	13	\$125	\$4,285
1040	17	82	\$487	621	2	\$21	\$508
2032	17	343	\$2,026	1195	1	\$40	\$2,065
3046	17	180	\$1,065	1909	•	7 \$63	\$1,128
3056	17	228	\$1,350	2851	1 (	94	\$1,445
3080	17	142	\$839	265	1	\$9	\$848
3096	17	171	\$1,012	1296	4	\$43	\$1,055
3096	53	198	\$1,173	Ø	Q	\$0	\$1,173
4003	17	83	\$371	128	(	3 \$4	\$375
4003	54	106	\$629	Ø	(	9 \$0	\$629
4006	17	189	\$1,117	1040	1	\$34	\$1,151
4010	17	319	\$1,885	1259	1	\$42	\$1,927
4090	17	86	\$509	1034		4 \$34	\$543
4117	17	579	\$3,424	5123	1	7 \$170	\$3,594
4126	17	273	\$1,616	4340	15	\$144	\$1,760
4132	17	332	\$1,960	3885	13	3 \$129	\$2,089
4204	17	667	\$3,944	2780		9 \$92	\$4,036
4220	17	565	\$3,340	7086	2	4 \$234	\$3,574
SUBTOTAL	THIS PAGE	6121	\$36,190	53514	18	3 \$1,772	\$37,961

PROJECT: PROJECT #2

***PAGE 2***

REF: PROJ #2 DATE: AUG 1987

BY: CMY

DESCRIPTION:

PROJECT #2 :NIGHT SETBACK, ECONOMIZER, INSULATION AND AUTOMATIC

OSD-PIF DOOR CLOSERS

BLDG. #	ECO #			ELEC		ENERGY DOLLARS	
CURTOTAL	PREV PAGE	C171	# 7E 190	53514	183	\$1 772	\$37.961
4233	17		\$1,714		5	\$45	
5100	17	167	\$990	Ø	0	\$0	\$990
5111	17	661	\$3,909	3358		\$111	\$4,020
5212	17	252	\$1,489	0	Ø	\$0	\$1,489
5212	54	99	\$587	Ø	. 0	\$0	\$587
5230	17	376	\$2,225	866	3	\$29	\$2,254
5234	17	510	\$3,013	Ø	0	\$0	\$3,013
5236	17	1285	\$7,597	23703	81	\$784	\$8,381
5236	53	63	\$371	Ø	Ø	\$0	\$371
5240	17	286	\$1,690	Ø	0	\$Ø	\$1,690
5314	17	1341	\$7,926	3842	13	\$127	\$8,053
5326	17	300	\$1,776	0	· · Ø	\$Ø	\$1,776
5330	17	832	\$4,921	Ø	Ø	\$0	\$4,921
5438	17	99	\$584	871	3	\$29	\$613
5450	17	337	\$1,990	8727	30	\$289	\$2,279
5450	19	Ø	\$0	69793	238	\$2,310	\$2,310
5454	17	196	\$1,159	5201	18	\$172	\$1,331
5460	17	1364	\$8,064	8609	29	\$285	\$8,349
5470	17	330	\$1,953	2039	7	\$67	\$2,020
SUBTOTAL	 . PAGES 1&2	14909	\$88.148	181909	621	\$6,021	\$94,168

PROJECT: PROJECT #2

***PAGE 3***

REF: PROJ #2 DATE: AUG 1987

BY: CMY

DESCRIPTION:

PROJECT #2 :NIGHT SETBACK, ECONOMIZER, INSULATION AND AUTOMATIC

OSD-PIF DOOR CLOSERS

	050-616	שטטא כי	LUSENS				
BLDG. #						ENERGY DOLLARS	
SUBTOTAL	PAGES 1&2	14909	\$88,148	181909	621	\$6,021	\$94,168
5470	54	333	\$1,969	0	0	\$0	\$1,969
5474	17	447	\$2,645	0	0	\$Ø	\$2,645
6002	17	69	\$410	604	2	\$20	\$430
6008	17	312	\$1,846	2718	9	\$90	\$1,936
6016	17	220	\$1,300	1244	4	\$41	\$1,341
6016	53	15	\$89	0	0	\$0	\$89
6048	17	259	\$1,532	4778	16	\$158	\$1,690
TOTAL PA	GES 1,2&3	16562	\$97,939	191252	653	\$6,330	\$104,269
TOTAL MB	TU =	16562	THERMAL +	653	ELECT. =	17215	TOTAL MBTU

REF: PROJ #3

PROJECT: PROJECT #3 FUNDING = OSD-PIF

DATE: AUG 1987

BY: CMY

DESCRIPTION:

PROJECT #3 : ROOF AND/OR WALL INSULATION

OSD-PIF

BLDG. #	ECO #	CONSTRUCTION COST	CONTRACT COST	TOTAL COST
1006	1	\$1,468	\$176	\$1,544
1020	1	\$5,198	\$624	\$5,822
4010	1	\$7,658	\$919	\$8,577
4132	1	\$2,772	\$333	\$3,105
5470	1	\$37,604	\$4,513	\$42,117
5474	1	\$20,692	\$2,483	\$23,175
	ه مثلت مثينة مثينة والله مثينة مثينة مثينة مثينة المثانة المثا			
rotals		\$75,390	\$9,048	\$84,438

ENGINEERING CONSULTING RESOURCES, INC. Consulting Engineers 4609 South 2300 East, Salt Lake City, Utah, 84117 (801) 277-7879

REF: PROJ #3

PROJECT: PROJECT #3 FUNDING = OSD-PIF

DATE: AUG 1987 BY: CMY

DESCRIPTION:

PROJECT #3 : ROOF AND/OR WALL INSULATION

OSD-PIF

	030 / 11						
BLDG. #	ECO #	THERMAL MBTU	ENERGY DOLLARS	ELECT	RICAL ENEF MBTU DOL	RGY LARS	TOTAL SAVING
1006		194	\$1,149	0	Ø	\$0	\$1,149
1020	1	631	\$3,729	Ø	Ø	\$0	\$3, <b>7</b> 29
4010	1	530	\$3,131	<b>0</b>	Ø	\$0	\$3,131
4132	1	208	\$1,230	0	Ø	\$Ø	\$1,230
5470	1	2735	\$16,171	<b>ø</b> :	Ø	\$Ø	\$16,171
5474	1	660	\$3,902	Ø	Ø	\$0	\$3,902
						\$0	\$29,312
TOTALS		4958	\$29,312	Ø	Ø	ΦU	कद्रज,ऽ१४

REF: PROJ #4 DATE: AUG 1987

PROJECT: PROJECT #4 FUNDING = LOW COST/NO COST

BY: CMY

DESCRIPTION:

PROJECT #4 : ROOF AND/OR WALL INSULATION

BLD6. #	ECO #	CONSTRUCTION COST	CONTRACT COST	TOTAL COST
1010	1	\$8,910	\$1,069	\$9,979
3080	1	\$6,256	\$751	\$7,007
4005	1	\$8,483	\$1,018	\$9,501
4125	1	\$9,646	\$1,157	\$10,803
5450	1	\$32,027	\$3,843	\$35,870
5460	1	\$25,329	\$3,039	\$28,368
<b>600</b> 8	1	\$19,860	\$2,383	\$22,243
6016	1	\$7,445	\$893	\$8,338
6048	1	\$8,258	\$991	\$9,249
TOTALS		\$126,214	\$15,147	\$141,361

REF: PROJ #4

PROJECT: PROJECT #4 FUNDING = LOW COST/NO COST - DATE: AUG 1987

BY: CMY

DESCRIPTION:

PROJECT #4 : ROOF AND/OR WALL INSULATION

BLDG. #	ECO #	THERMAL MBTU	ENERGY DOLLARS	ELECT	RICAL ENE MBTU DO	RGY LLARS	TOTAL SAVINGS
1010	1	139	\$821	0	0	\$0	\$821
3080	1	102	\$601	Ø	0	\$0	\$501
4006	1	81	\$480	Ø	Ø	\$0	\$480
4126	1	121	\$713	0	Ø	\$0	\$713
5450	1	316	\$1,868	0	Ø	\$0	\$1,868
5460	1	440	\$2,600	Ø	Ø	\$0	\$2,600
6008	1	210	\$1,243	0	Ø	\$0	\$1,243
6016	1	114	\$672	0	Ø	\$0	\$672
6048	1	140	\$827	0	Ø	\$0	\$827
TOTALS		1663	\$9,825	0	Ø	\$0	\$9,825
TOTAL MBT	·U =	1663	THERMAL +	Ø EL	ECT. =	1663	TOTAL MBTU

ENGINEERING CONSULTING RESOURCES, INC.

4609 South 2300 East, Salt Lake City, Utah, 84117

(801) 277-7879

REF: PROJ #5 PROJECT: PROJECT #5 FUNDING = LOW COST/NO COST DATE: AUG 1987

BY: CMY

DESCRIPTION:

PROJECT #5 :INTERIOR STORM WINDOWS

BLDG. #	ECO #	CONSTRUCTION COST	CONTRACT COST	TOTAL COST
4126	2	\$7,312	\$877	. \$8,190
4204	2	\$4,900	\$588	\$5,488
5222	2	\$14,331	\$1,720	\$16,051
5234	2	\$11,674	\$1,401	\$13,075
5480	2	\$27,262	\$3,271	\$30,534
5470	2	\$33,046	\$3,966	\$37,012
5474	2	\$1,743	\$209	\$1,952
6008	2	\$3,144	\$377	\$3,521
6048	2	\$790	\$95	\$885
TOTALS		\$104,203	\$12,505	\$116,708

REF: PROJ #5

DATE: AUG 1987 PROJECT: PROJECT #5 FUNDING = LOW COST/NO COST

BY: CMY

DESCRIPTION:

PROJECT #5 : INTERIOR STORM WINDOWS

BLDG. #	ECO #	THERMAL MBTU			TRICAL ENER MBTU DOL		
4126	2	134	\$794	0	0	\$0	\$794
4204	2	59	\$350	Ø	Ø	\$0	\$350
5222	2		\$2,172	0	Ø	\$0	\$2,172
5234	2	246		0	Ø	<b>\$</b> Ø	\$1,457
5460	2	463	\$2,735	Ø	Ø	\$0	\$2,735
5470	2	473	\$2,799	0	Ø	\$0	\$2,799
5474	2	33	\$198	Ø	Ø	\$0	\$198
6008	2	71	\$419	Ø	Ø	\$0	\$419
6048	2	12	\$70	0	Ø	\$Ø 	\$70 
TOTALS		1858	\$10,994	Ø	Ø	\$0	\$10,994
TOTAL ME	3TU =	1858	THERMAL +	Ø EI	LECT. =		TOTAL MBTU

ENGINEERING CONSULTING RESOURCES, INC. 4609 South 2300 East, Salt Lake City, Utah, 84117 (801) 277-7879

Consulting Engineers

REF: PROJ #6

PROJECT: PROJECT #6 FUNDING = LOW COST/NO COST

DATE: AUG 1987

BY: CMY

DESCRIPTION:

PROJECT #6 : INFRARED OIL FIRED HEATERS

ECO #	CONSTRUCTION COST	CONTRACT COST	TOTAL COST
18	\$137,885	\$16,546	\$154,431
	#177 995	#1C EAE	\$154,431
	<u></u>	ECO # COST	18 \$137,885 \$16,546

ENGINEERING CONSULTING RESOURCES, INC. 4609 South 2300 East, Salt Lake City, Utah, 84117 (801) 277-7879

Consulting Engineers

PROJECT: PROJECT #5 FUNDING = LOW COST/NO COST

REF: PROJ #6 DATE: AUG 1987

BY: CMY

DESCRIPTION:

PROJECT #6 : INFRARED OIL FIRED HEATERS LOW COST/NO COST

BLDG. #	ECO #	THERMAL MBTU	ENERGY DOLLARS	ELECTF		NERGY DOLLARS	TOTAL SAVINGS
5470	18	1983	\$11,725	13966	48	\$1,234	\$12,959
TOTALS		1983	\$11,725	13966	48	\$1,234	\$12,959
TOTAL ME	3TU =	1983	THERMAL +	48 ELI	ECT. =	2031	TOTAL MBTU

PROJECT: PROJECT #7 FUNDING = LOW COST/NO COST

REF: PROJ #7 DATE: AUG 1987

BY: CMY

#### DESCRIPTION:

PROJECT #7 :LIGHTING, MOTOR & COOLER CONTROLS, CAULKING AND LOW/NO WEATHER STRIPPING, POOL COVER & INFRARED HEATING

BLDG. #	ECO #	CONSTRUCTION COST	CONTRACT COST	TOTAL COST
1010	48	\$12,009	\$1,441	\$13,450
. 1012	50	\$337	\$40	\$377
1020	50	\$172	\$21	\$192
2032	60	\$103	\$12	\$115
3096	26	\$4,224	\$507	\$4,730
4010	3	\$1,762	\$211	\$1,973
4010	18	\$42,372	\$5,085	\$47,457
4110	43	\$57,445	\$6,893	\$64,338
4120	43	\$76,814	\$9,218	\$86,032
4132	60	\$206	\$25	\$230
4233	3	\$931	\$112	\$1,043
5111	26	\$6,973	\$837	\$7,810
5111	46	\$13,870	\$1,664	\$15,534
5222	26	\$7,684	\$922	\$8,608
5236	13	\$3,960	\$475	\$4,439
5236	48	\$13,637	\$1,636	\$15,27
5236	55	\$9,787	\$1,174	\$10,96
5314	26	\$13,659	\$1,639	\$15,29
5326	55	\$5,788	\$695	\$6,48
		#271 732	\$32 FØF	\$301 33

REF: PROJ #7

PROJECT: PROJECT #7 ***PAGE 2***

DATE: AUG 1987

BY: CMY

DESCRIPTION:

PROJECT #7 :LIGHTING, MOTOR & COOLER CONTROLS, CAULKING AND LOW/NO WEATHER STRIPPING, POOL COVER & INFRARED HEATING

BLDG. #	ECO #	CONSTRUCTION COST	CONTRACT COST	TOTAL COST
SUBTOTAL	PREV PAGE	\$271,732	\$32,606	\$304,338
5438	55	\$1,905	\$229	\$2,134
5450	3	\$4,141	\$497	\$4,638
5474	13	\$3,019	\$362	\$3,381
TOTAL PA	GES 1 & 2	\$280,797	\$33,693	\$314,490

REF: PROJ #7

PROJECT: PROJECT #7 FUNDING = LOW COST/NO COST

DATE: AUG 1987 BY: CMY

#### DESCRIPTION:

PROJECT #7 :LIGHTING, MOTOR & COOLER CONTROLS, CAULKING AND WEATHER STRIPPING, POOL COVER & INFRARED HEATING

	LOW/NO	WEITHE		.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
		THERMAL	ENERGY	ELEC	TRICAL E	NERGY	TOTAL
BLDG. #	ECO #			KWH		DOLLARS	SAVINGS
1010	48	129	\$765	25608	87	\$847	\$1,612
1012	50	Ø	\$0	1655	6	\$55	\$55
1020	50	0	\$0	827	3	\$27	\$27
2032	60	0	\$0	449	2	\$15	\$15
3096	26	194	\$1,149	Ø	0	\$0	\$1,149
4010	3	35	\$209	Ø	0	\$0	\$209
4010	18	1180	\$6,979	3871	13	\$128	\$7,107
4110	43	1644	\$9,719	-50598	-173	(\$1,675)	\$8,044
4120	43	3760	\$22,229	-106735	-364	(\$3,532)	\$18,697
4132	60	Ø	\$0	936	3	\$31	\$31
4233	3	19	\$113	Ø	Ø	\$0	\$113
5111	26	347	\$2,052	Ø	Ø	\$0	\$2,052
5111	46	246	\$1,453	Ø	Ø	\$0	\$1,453
5222	26	278	\$1,641	Ø	Ø	\$0	\$1,641
5236	13	0	\$0	20849	71	\$883	\$883
5236	48	197	\$1,164	12768	44	\$423	\$1,587
5236	55	0	\$0	32771	112	\$1,567	\$1,567
5314	26	347	\$2,052	Ø	0	\$0	\$2,052
5326	55	0	\$Ø	12257	42	\$792	\$792
SUBTOTAL	THIS PAGE	8377	\$49,525	-45342	-155	(\$439)	\$49,086

PROJECT: PROJECT #7

***PAGE 2***

REF: PROJ #7 DATE: AUG 1987

BY: CMY

DESCRIPTION:

PROJECT #7 :LIGHTING, MOTOR & COOLER CONTROLS, CAULKING AND LOW/NO WEATHER STRIPPING, POOL COVER & INFRARED HEATING

BLDG. #	ECO #	THERMAL MBTU	ENERGY DOLLARS			NERGY DOLLARS	TOTAL SAVINGS
SUBTOTAL	. PREV PAGE	8377	\$49,525	-45342	-155	(\$439)	\$49,086
5438	55	Ø	\$0	6384	22	\$308	\$308
5450	3	121	\$715	Ø	Ø	\$Ø	\$715
5474	13	0	\$Ø	5924	20	\$389	\$389
TOTAL PA	AGES 1 & 2	8498	\$50,240	-33034	-113	\$258	\$50,498
TOTAL MB	3TU =	8498	THERMAL +	-113	ELECT. =	8385	TOTAL MBTU